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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/693,672

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EXAMINER

ECHELMEYER, ALIX ELIZABETH

ART UNIT

PAPER NUMBER

1745

MAIL DATE

DELIVERY MODE

09/10/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/693,672

Applicant(s)

JAMES ET AL.

Examiner

Alix Elizabeth Echelmeyer

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1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 2 and 3 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/12/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to the amendment filed July 20, 2007. Claim 1 has been amended. Claims 2 and 3 are withdrawn from a previous election. Claims 15-34 have been cancelled. Claims 1 and 4-14 are pending and are rejected finally for the reasons given below.

Election/Restrictions

2. Applicant's argument for the rejoinder of claims 2 and 3 is noted; however, claim 1, the generic claim, is still rejected. Claims 2 and 3 remain withdrawn.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 4-6, 8 and 10-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Bonk et al. (US Pre-grant Publication 2001/0001052).

Bonk et al. teach a sealed fuel cell stack (abstract). The sealing is directed to the polymer electrolyte membrane assembly, consisting of a membrane having an anode catalyst on one side and a cathode catalyst on the other ([0019]). There are also anode

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and cathode substrates and water transport plates corresponding to the fluid diffusion layers of the instant invention ([0041]-[0043]). On the outer periphery of the fluid diffusion layers are impregnated seals ([0042], [0043]).

As seen in Figure 2, a barrier film (46, 42) is placed between the membrane (48) and the impregnated seals (52, 36) ([0041]-[0045]).

The seals of Bonk et al. are leak-proof ([0053]).

Regarding claim 4, the PEM assembly, including the barrier film, of Bonk et al. is heated to bond the components together ([0052]). In order for bonding between the seals to occur, diffusion or impregnation between the various seals would occur during the heating and pressing steps.

Regarding claim 5, the seals of Bonk et al. may be made of silicone rubber or foam ([0045], [0058]).

As for claims 6 and 8, Bonk et al. teach that the barrier films are made of a thermoplastic material ([0045]).

Regarding claims 10 and 11, Bonk et al. teach anode and cathode fluid diffusion layers (Figure 2 Ref. Num. 32, 34).

Concerning claims 12 and 13, the seals, including the barrier layers, of Bonk et al. encompass the periphery the substrates (Figure 3, [0037], [0046]).

With regard to claim 14, it can be seen in Figure 2 that the seals (62, 53, 46, 42, 36, 60) extend beyond the membrane (48) and fluid diffusion layers (32, 34).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonk et al. in view of Kaye (US Pre-Grant Publication 2005/0014059).

The teachings of Bonk et al. as discussed above are incorporated herein.

Bonk et al. teach a thermoplastic barrier layer but fail to teach that it is a polyimide material.

Kaye teaches a fuel cell having a membrane electrode assembly disposed between two bipolar plates, the plates having a gasket around their perimeter (abstract; [0026]).

Kaye further teaches that polyimide may be used for the gasket material since it has high temperature and chemical resistance ([0166]).

It would have been desirable to use the polyimide gasket of Kaye to seal the membrane electrode assembly of Bonk et al. since polyimide has high temperature and chemical resistance.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the polyimide gasket of Kaye to seal the membrane electrode assembly of Bonk et al. since polyimide has high temperature and chemical resistance.

Response to Arguments

7. Applicant's arguments filed July 20, 2007 have been fully considered but they are not persuasive.

On page 5 of the Remarks, Applicant argues that Bonk does not teach a barrier film, but that the component of Bonk that the examiner has recognized as a barrier film is in fact a seal. While Bonk may call it a seal, it is the same material in the same position as the instant invention; therefore, it is inherently a barrier film. Additionally, a component that functions as a barrier would inherently seal, and vice versa. If a component is a barrier, then it is preventing the contamination of something on one side by something on the other side. A seal serves the same purpose.

Next, Applicant argues that the barrier films of Bonk "are not interposed between the ion-exchange membrane and the fluid impermeable integral seals along at least a portion of the sealing region of at least one fluid diffusion layers" (page 6 of Remarks). The examiner disagrees. Bonk teaches that the substrate seal impregnates the cathode and anode substrates ([0042]). In order for impregnation to occur, diffusion between the two materials would inherently occur. The seam between the substrate seal and the cathode substrate would have a certain thickness, extending into the body of the substrate as well as the body of the seal. The barrier film, therefore, would inherently cover at least a portion of the sealing region.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is 571-272-1101. The examiner can normally be reached on Mon-Fri 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy N. Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Alix Elizabeth Echelmeyer
Examiner
Art Unit 1745

aee



SUSY TSANG-FOSTER
PRIMARY EXAMINER